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On the intrinsic dynamics of Southern Ocean filamentary jets

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The outputs of a high-resolution model of the Southern Ocean (SO) circulation forced by steady surface momentum fluxes are used to investigate the nonlinear interactions between the high- and low-frequency intrinsic variability of the Antarctic Circumpolar Current fronts in the SO longitudinal range 100°E-120°W. The analysis of the energy exchange between the time-dependent mean flow and the eddy field sheds light on the role played by potential vorticity gradients, topographic effects and Rossby dynamics in the structure and transport of SO filamentary jets and of their variability of intrinsic oceanic origin (this work was funded by the MOMA and IPSODES projects of the Italian “Programma Nazionale di Ricerche in Antartide”).